

What is claimed is:

1. A method for preparing an oxide thin film on a substrate, which comprises the steps of admixing a raw gas obtained through the vaporization of a raw material for the oxide thin film, a carrier gas and an oxidation gas in a gas-mixing unit and supplying the resulting gas mixture on a heated substrate placed in a reaction chamber as a chemical vapor phase growth apparatus through a shower plate to thus make the gas mixture react with one another, wherein a rate of oxidation gas flow rate is not less than 60% on the basis of the gas mixture.

2. A method for preparing an oxide thin film on a substrate, which comprises the steps of admixing a raw gas obtained through the vaporization of a raw material for the oxide thin film, a carrier gas and an oxidation gas in a gas-mixing unit and supplying the resulting gas mixture on a heated substrate placed in a reaction chamber as a chemical vapor phase growth apparatus through a shower plate to thus make the gas mixture react with one another, wherein the method comprises the steps of forming an initial layer as a seed layer using the gas mixture and then forming a second layer using the gas mixture containing oxidation gas in a flow rate higher than the oxidation gas flow rate used for forming the initial layer, in succession.

3. The method for preparing an oxide thin film as set forth in claim 2, wherein the flow rate of oxidation gas used in a film-forming process for forming the initial layer is less than 60%, and the flow rate of oxidation gas used in a film-forming process for forming the second layer is not less than 60%.

4. The method for preparing an oxide thin film as set forth in any one of claims 1 to 3, wherein the gas mixture is supplied in the reaction chamber through a gas activating means which is arranged between the gas-mixing unit and the shower plate.

5. The method for preparing an oxide thin film as set forth in claim 4, wherein the gas activating means is maintained at such a temperature that in introducing the raw gas into the shower plate the raw gas is vapor phase decomposed into metal atom-containing molecules, which can prepare a film having desired properties, in the gas activating means.

6. The method for preparing an oxide thin film as set forth in claim 5, wherein the gas activating means is maintained at a temperature ranging from a temperature without causing any liquefaction or deposition of the raw gas to a temperature without causing film -formation thereof.

5 7. The method for preparing an oxide thin film as set forth in any one of claims 1 to 6, wherein the oxidation gas is a member selected from the group consisting of oxygen, ozone, N₂O and NO₂.

10 8. The method for preparing an oxide thin film as set forth in any one of claims 1 to 7, wherein the carrier gas used is an inert gas selected from the group consisting of nitrogen, helium, argon, neon and krypton.

9. The method for preparing an oxide thin film as set forth in any one of claims 1 to 8, wherein the substrate used is one prepared from a material selected from the group consisting of Pt, Ir, Rh, Ru, MgO, SrTiO₃, IrO₂, RuO₂, SrRuO₃, and LaNiO₃.

15 10. The method for preparing an oxide thin film as set forth in any one of claims 1 to 9, wherein the raw material for preparing the oxide thin film is an oxide of a paraelectric dielectric material selected from the group consisting of SiO₂, TiO₂, Al₂O₃, Ta₂O₅, MgO, ZrO₂, HfO₂, (Ba, Sr)TiO₂ and SrTiO₃; or an oxide of a ferroelectric material selected from the group consisting of Pb(Zr, Ti)O₃, SrBi₂Ta₂O₉ and Bi₄Ti₃O₁₂.

20 11. The method for preparing an oxide thin film as set forth in any one of claims 2 to 10, wherein, when a prescribed atom present in the oxide thin film prepared easily diffuse into the substrate, an epitaxial growth is realized by increasing an amount of the atom in the initial layer to a level higher than the atom amount used in the case of the substrate into which the atom hardly diffuses.

25 12. An apparatus for preparing an oxide thin film on a substrate by admixing a raw gas obtained through the vaporization of a raw material for the oxide thin film, a carrier gas and an oxidation gas in a gas-mixing unit and supplying the resulting gas mixture on a heated substrate placed in a reaction chamber as a chemical vapor phase growth apparatus through a shower plate to thus make the gas mixture react with one another, wherein a gas activating means is arranged between the gas-mixing unit and the shower

plate.

13. The apparatus for preparing an oxide thin film as set forth in claim 12, wherein the gas activating means is equipped with a heating means.

14. The apparatus for preparing an oxide thin film as set forth in claim 12 or 13, wherein the gas activating means is a pipe line between the gas-mixing unit and the shower plate.